8-1-1969

# Freeze Branding - A Method of Identification for Swine

R. E. Hunsley

H. W. Jones

admin - Mgt - yes

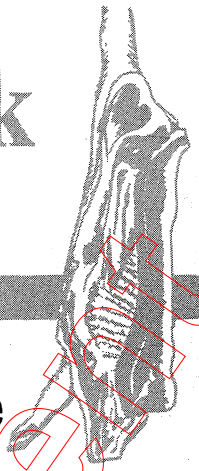
SWINE

Pigs to Pork

MANAGEMENT

Cooperative Extension Service PURDUE UNIVERSITY Lafayette, Indiana

AS-389
Aug. 1969



# Freeze Branding--A Method of Identification for Swine

*R. E. Hunsley and H. W. Jones, Animal Sciences Department*



## Introduction

Identification of sows has long been a problem with swine producers. None of the many means of identification has been satisfactory. Ear notches have been the most permanent means of identification for swine, particularly for the young pig from birth to market weight. However, the real need for a good permanent identification system is much more critical just prior to and during breeding and farrowing for gilts and sows. It is essential that the producer be able to identify the gilt or sow prior to farrowing so that she can be moved to the farrowing barn and into the farrowing stalls. It is also necessary to be able to easily identify the sow following farrowing so that the proper production information can be recorded regarding the litter as well as the sow's reproductive performance. Many times it is difficult to distinguish between a tear and a notch in the ear and quite often a portion of the ear will be torn away during a fight, will become frostbitten or possibly torn off on fences, feeders or farrowing stalls. Gilts or sows cannot be identified according to ear notches except at close range. Scissor marks are very temporary because they are lost as soon as a new hair crop develops. Paint brands last for a rather short time depending on the durability of the paint that is used. Ear tags must necessarily be small and can only be read at close range. Some kinds tear out, and many are lost. Quite often the ear tag is obscured by dirt and needs to be cleaned before it can be read.

If the sow herd is small, the owner will have little difficulty retaining individual identity. It is when the herd gets too large for this system to work that some better means of identification is needed. Freeze branding has been relatively successful as a permanent method of identification for cattle, and it is now being researched as a possible method of permanent identification for swine.

## Equipment

Freeze branding or branding animals with extreme cold instead of heat was developed by Dr. Keith Farrell, College of Veterinary Medicine, Washington State University, Pullman, Washington.

The technique involves applying to the animal's skin a branding instrument (iron) in the shape of the desired identification mark chilled to an extremely low temperature. This low temperature kills the pigment producing cells (melanocytes) in the skin and hair. When the brand thaws, the hair falls out. The new hair that grows back, in about 3 weeks to 2 months, is white since there is no longer any pigment to give it color. A white freeze brand shows up best on an animal with dark hair. However, a white animal can be freeze branded by leaving the branding iron on long enough to destroy the hair follicles. The resulting brand is similar to that made by a hot iron (Figure 1). In this case the hide is damaged to some extent but much less than with a hot brand.

Figure 1. Freeze brand on Yorkshire sow one hour after freeze-branding

Materials needed for freeze branding are:

1. Hurdle or some device to restrain the animal
2. Either mechanical or manual hair clipper
3. Branding iron
4. Insulated container for the coolant.
5. Alcohol, acetone, methyl alcohol or liquid nitrogen
6. Dry ice (not needed if liquid nitrogen is used)
7. Room temperature alcohol
8. Stiff brush
9. Gloves

Although freeze branding is painless a hurdle is essential to restrain the sow or gilt in the corner or end of a pen because the iron must be placed firmly in contact with the skin for the desired length of time. A snare or some other type of restrainer may be necessary for big hard to handle sows or gilts.

To obtain a legible brand, clip the hair as closely as possible at the branding site. Hair is an excellent insulator and in order to make proper contact with the skin, it is necessary to clip the hair with either an electric or manual clipper.

Copper and bronze branding irons or their alloys have the most efficient penetration of the extremely cold temperature. Steel irons have also been used satisfactorily when slightly more time is allowed for the cold to penetrate. The face of the iron should be about three-eighths inch wide, preferably rounded, and it should be one to two inches deep from the face to the back to give it capacity to retain cold. The four-inch height is recommended for sows. A smaller size may be necessary to put several numbers on a gilt. The freezebrand gets bigger as the gilt grows. Four-inch copper irons cost about $8-$9 each.

An insulated container of some sort is essential to keep the coolant at low temperatures. An old picnic cooler, fishing box, or a 3-gallon bucket in an insulated bushel basket are good containers. The size should be large enough to handle about 1 gallon of coolant, 1 pound of dry ice and several branding irons.

Since the temperature of dry ice is around -90°F, wear gloves to handle the dry ice and branding irons. Insulated gloves which have a waterproof coating protect hands during the branding procedure.

Various compounds such as methyl alcohol, isopropyl alcohol, ethyl alcohol or acetone can be used successfully as coolants. Methyl alcohol can be purchased as alcohol type anti-freeze (methanol) at most service stations or supply stores for less than $1 per gallon. Methanol is the most economical available coolant. It does, however, uniformly color both dry ice and irons in the container, making it difficult to differentiate between them. The color of the methanol solution makes it very difficult to see the bubbles given off from the branding irons during the cooling and re-cooling period.

Dry ice or liquid nitrogen can be used as a refrigerant. Dry ice costs from 12 to 25 cents per pound. Approximately .25 pound of dry ice is required to brand each animal plus an adequate amount to cool the coolant. Artificial insemination organizations may be able to provide liquid nitrogen and jugs for freeze branding. These jugs must have at least a 4-inch opening. Although liquid nitrogen will cool the irons at a faster rate and requires no additional coolant, it is more expensive than dry ice.

Branding procedure

In preparing the alcohol-dry ice bath, pour enough coolant into the cooler container to cover the branding irons (about 1 gallon). The ratio of dry ice to alcohol is not critical. Simply add enough alcohol to cover the irons and enough dry ice to chill the alcohol. Allow the solution (dry ice and alcohol) to cool (to -70°F) for 20 minutes before putting the branding irons in for the first time. Chill the irons for 10 minutes prior to using the first time. Once the irons are cooled, they will chill in a couple minutes after each use.

The animal should be restrained in a squeeze chute, behind a hurdle or with a snare. The hair should be clipped, as close as possible, at the chosen branding site. During the early experimentation at Purdue University, the numbers (litter number and individual number) were placed about six to eight inches off either side of the midline over the shoulder or over the top of the rib areas. It was felt that this area represented a flatter surface on which to press the branding irons to make firm contact with all parts of the number. It was also felt that the operator could apply the desired pressure on either of these areas for the best possible brand. A brand on the top of the shoulder or along the top of the side should be easy to read when sows are in the farrowing stalls and also when sows or gilts are out in the lots and get muddy, the topline is the last area that normally gets covered with mud. After the hair has been clipped as close as possible from the chosen branding site, the area should be brushed vigorously with a stiff-bristled brush. This helps clear away the dirt and scurf from the branding site and helps insure a good freeze brand.

Clean and saturate the branding site with room temperature alcohol. During the warm seasons of the year, the alcohol may evaporate rapidly. Take a squeeze bottle filled with alcohol or a heavy rag saturated with alcohol and apply a liberal amount of alcohol on the clipped area prior to and while branding the animal. The alcohol will provide a liquid contact between the iron and skin and will also prevent the extremely cold iron (-70°F) from sticking to the skin. This step is critical for successful branding.

Apply the branding irons to the clipped hide immediately after the area is cleaned and saturated with alcohol. Administer uniform, firm pressure on the irons to obtain a readable brand (Figure 2). Be sure the entire surface of

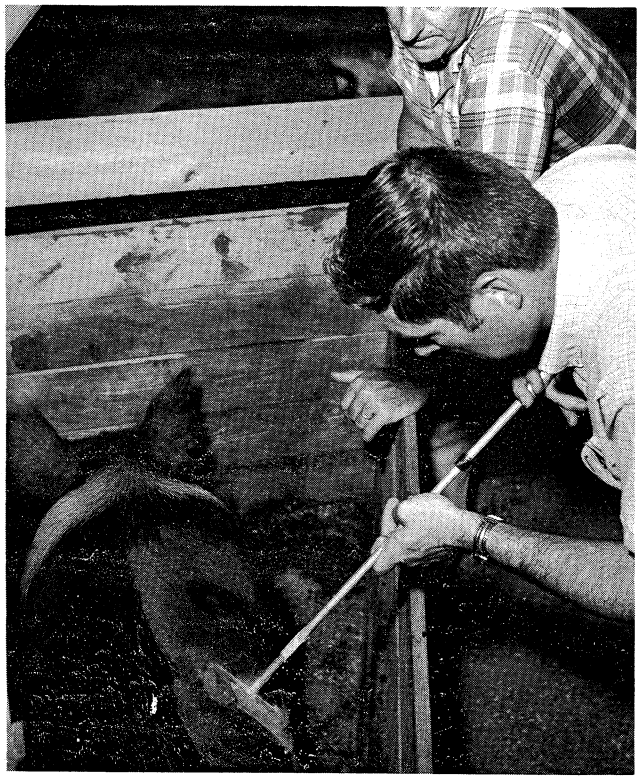


Figure 2. Cold branding iron pressed firmly in the clipped area saturated with alcohol.

the branding iron is in contact with the hide. There is not enough conclusive work with freeze brands for swine regarding the length of time to leave the brands on the hide. Research studies are now in progress at Purdue University using 30, 45 and 60 second branding times on Poland China, Hampshire and Duroc sows and 45, 60 and 75 seconds on Yorkshire sows. If steel irons are used, allow 10 more seconds in each instance.

There are several variables that could affect the length of time the branding iron is left on the hide. All of these variables will have to be researched before accurate recommendation can be given for length of time to freeze brand swine. Some of the variables that could be extremely important factors to consider when freeze branding swine are listed as follows:

1. Breed
2. Season of year - hair grows faster during certain seasons of the year.
3. Hide thickness or texture and sensitivity
4. Age (sows vs. gilts)
5. Air, temperature and humidity at branding time
6. Condition of animal (fat vs. thin)
7. Methods of clipping (large animal vs. small animal clipper)

Immediately after the branding iron is lifted, the hide area appears to be frozen stiff and is indented in the form of the iron. As the skin thaws, symptoms similar to frostbite appear. The skin becomes red and swollen over the branded area. In about 2 weeks the hair is usually lost on the brand site, and the skin remains bare until the next hair growth cycle. White hair generally appears on the scar about 6 weeks to 3 months later and grows to the same length as the other hair on the animal.

Advantages of freeze branding are:

1. Permanent means of identification
2. Painless
3. Legible during all seasons of year
4. Permits identification of animal from a distance
5. Minimum scar formation produced
6. Can re-brand in same spot if first attempt fails
7. Less possibility of bacterial infection and skin irritation by external parasites compared to hot brands

Unsatisfactory results may be attributed to:

1. Inadequate restraint of the animal
2. A poor job of clipping
3. Failure to saturate the brand area with alcohol immediately before the iron is applied
4. Not applying firm pressure on the iron
5. Not holding the iron on the hide the proper length of time.

Remember: Underbranding will result in no permanent mark and overbranding causes permanent loss of hair.

## Safety Precautions

Since super-cold materials can stick to the skin and cause tearing, all equipment and materials must be handled with caution. Wear gloves to protect hands. Vapors from super-cold liquids are very cold and can damage the delicate tissues of the eyes and nose. Proper ventilation is important; work should be done in the open air or in a well-ventilated building. Since alcohol and acetone are flammable, avoid smoking or open flames. After completing the branding, let the coolant "warm up" before placing it in a container. Leave the container cap loose or off until the liquid reaches room temperature, or it may explode. During the branding procedure, take all precautions to avoid injuries and be sure to keep children away from the branding area.